AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(Canceled)

2.(Previously Presented) A method as in claim 4, wherein the antenna array has M-elements (M>1), wherein individual ones of P orthogonal spreading codes are reused aM times within the coverage area, where 1/M<a< 1.

3.(Previously Presented) A method as in claim 4, wherein the step of beamforming comprises a step of despreading the signal received from the desired SS, followed by a step of spatial filtering.

4.(Previously Presented) A method for operating a synchronous space division multiple access, code division multiple access communications system, comprising:

within a coverage area of a base station (BS), assigning the same spreading code to a plurality of subscriber stations (SSs); and

beamforming using an antenna array at the BS so as to maximize a signal to interference plus noise ratio for a signal received from a desired SS by steering a null towards another same-code SS to minimize interference from the same-code SS,

wherein the step of beamforming comprises receiving from the subscriber stations a spatial signature vector that is comprised of path amplitude and phase from each of *m* BS antenna elements, and where the BS, from the spatial signature vectors received from a plurality of same-code subscriber stations, computes antenna element weight vectors.

5.(Canceled)

6.(Currently Amended) A system as in ~~claim 5~~ claim 8, wherein said antenna array comprises M-elements (M>1), wherein individual ones of P orthogonal spreading codes are reused aM times within the coverage area, where 1/M<a< 1.

7.(Currently Amended) A system as in ~~claim 5~~ claim 10, wherein said beamforming circuitry comprises a despreader for despreading a signal received from said one of said subset and a spatial filter having an input coupled to an output of said despreader.

8.(Previously Presented) A synchronous space division multiple access, code division multiple access communications system, comprising a base station having a coverage area for a set of subscriber stations disposed within said coverage area, said base station comprising an adaptive antenna array for receiving transmissions from said set of subscriber stations and for transmitting signals to said set of subscriber stations, wherein a subset of subscriber stations comprises a plurality of subscriber stations that are assigned an identical spreading code, said base station comprising beamforming circuitry coupled to said adaptive antenna array for maximizing a signal to interference plus noise ratio for a signal transmitted from one of said subset subscriber stations by steering a null towards others of said subset of same code subscriber stations to minimize interference from the said others of said subset,

wherein said beamforming circuitry comprises a despreader for despreading a signal received from said one of said subset and a spatial filter having an input coupled to an output of said despreader, and

wherein said system has a maximum system capacity of aMP channels.

9.(Previously Presented) A synchronous space division multiple access, code division multiple access communications system, comprising a base station having a coverage area for a set of subscriber stations disposed within said coverage area, said base station comprising an adaptive antenna array for receiving transmissions from said set of subscriber stations and for transmitting signals to said set of subscriber stations, wherein a subset of subscriber stations comprises a plurality of subscriber stations that are assigned an identical spreading code, said base station comprising beamforming circuitry coupled to said adaptive antenna array for maximizing a signal to interference plus noise ratio for a signal received from one of said subset of subscriber stations by steering a null towards others of said subset of subscriber stations to minimize interference from the said others of said subset,

wherein for a case of independent fading on each antenna element of said antenna array, said system achieves a diversity gain of M, where M is equal to the number of antenna elements of said antenna array.

10.(Previously Presented) A synchronous space division multiple access, code division multiple access communications system, comprising a base station having a coverage area for a set of subscriber stations disposed within said coverage area, said base station comprising an adaptive antenna array for receiving transmissions from a set of subscriber stations and for transmitting signals to said set of subscriber stations, wherein a subset of subscriber stations comprises a plurality of subscriber stations that are assigned an identical spreading code, said base station comprising beamforming circuitry coupled to said adaptive antenna array for maximizing a signal to interference plus noise ratio for a signal received from one of said subset of subscriber stations by steering a null towards others of said subset of subscriber stations to minimize interference from the said others of said subset,

wherein the BS receives from a plurality of the subset of subscriber stations a spatial signature vector that is comprised of path amplitude and phase from each of *m* BS antenna elements, and where said BS, from the spatial signature vectors received from a plurality of the subset of subscriber stations, computes antenna element weight vectors.

11-12.(Canceled)

13.(Currently Amended) A method as in ~~claim 12~~claim 3, further comprising transmitting a message from the BS to a same-code SS by combining results of the spatial filtering for at least two same-code SSs followed by spreading the message and transmitting.

14-19.(Canceled)